## 10/538066

## SEQUENCE LISTING

## JC17 Rec'd PCT/PTO 0 9 JUN 2005

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<120> HLA-A1, -A2, -A3, -A24, -B7, and -B44 Tumor Associated Antigen
       Peptides and Compositions
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<140> PCT/US03/038949
<141> 2003-12-10
<150> US 60/432,017
<151> 2002-12-10
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Lys Glu Val Leu Leu Leu Val His Asn Leu Pro Gln His Leu Phe Gly 50 55 60

Tyr Ser Trp Tyr Lys Gly Glu Arg Val Asp Gly Asn Arg Gln Ile Ile 65 70 75 80

Gly Tyr Val Ile Gly Thr Gln Gln Ala Thr Pro Gly Pro Ala Tyr Ser 85 90 95

Gly Arg Glu Ile Ile Tyr Pro Asn Ala Ser Leu Leu Ile Gln Asn Ile 100 105 110

Ile Gln Asn Asp Thr Gly Phe Tyr Thr Leu His Val Ile Lys Ser Asp 115 120 125

Leu Val Asn Glu Glu Ala Thr Gly Gln Phe Arg Val Tyr Pro Glu Leu 130 135 140

Pro Lys Pro Ser Ile Ser Ser Asn Asn Ser Lys Pro Val Glu Asp Lys 145 150 155 160

Asp Ala Val Ala Phe Thr Cys Glu Pro Glu Thr Gln Asp Ala Thr Tyr 165 170 175

Leu Trp Trp Val Asn Asn Gln Ser Leu Pro Val Ser Pro Arg Leu Gln 180 185 190

Leu Ser Asn Gly Asn Arg Thr Leu Thr Leu Phe Asn Val Thr Arg Asn 195 200 205

Asp Thr Ala Ser Tyr Lys Cys Glu Thr Gln Asn Pro Val Ser Ala Arg 210 215 220

Arg Ser Asp Ser Val Ile Leu Asn Val Leu Tyr Gly Pro Asp Ala Pro 225 230 235 240

Thr Ile Ser Pro Leu Asn Thr Ser Tyr Arg Ser Gly Glu Asn Leu Asn 245 250 255

Leu Ser Cys His Ala Ala Ser Asn Pro Pro Ala Gln Tyr Ser Trp Phe 260 265 270

Val Asn Gly Thr Phe Gln Gln Ser Thr Gln Glu Leu Phe Ile Pro Asn 275 280 285

Ile Thr Val Asn Asn Ser Gly Ser Tyr Thr Cys Gln Ala His Asn Ser 290 295 300

Asp Thr Gly Leu Asn Arg Thr Thr Val Thr Thr Ile Thr Val Tyr Ala 305 310 315 320

Glu Pro Pro Lys Pro Phe Ile Thr Ser Asn Asn Ser Asn Pro Val Glu 325 330 335

Asp Glu Asp Ala Val Ala Leu Thr Cys Glu Pro Glu Ile Gln Asn Thr 340 345 350

Thr Tyr Leu Trp Trp Val Asn Asn Gln Ser Leu Pro Val Ser Pro Arg 355 360 365

Leu Gln Leu Ser Asn Asp Asn Arg Thr Leu Thr Leu Leu Ser Val Thr 370 375 380

Arg Asn Asp Val Gly Pro Tyr Glu Cys Gly Ile Gln Asn Glu Leu Ser 385 390 395 400

Val Asp His Ser Asp Pro Val Ile Leu Asn Val Leu Tyr Gly Pro Asp 405 410 415

Asp Pro Thr Ile Ser Pro Ser Tyr Thr Tyr Tyr Arg Pro Gly Val Asn 420 425 430

Leu Ser Leu Ser Cys His Ala Ala Ser Asn Pro Pro Ala Gln Tyr Ser 435 440 445

Trp Leu Ile Asp Gly Asn Ile Gln Gln His Thr Gln Glu Leu Phe Ile 450 455 460

Ser Asn Ile Thr Glu Lys Asn Ser Gly Leu Tyr Thr Cys Gln Ala Asn 465 470 475 480

Asn Ser Ala Ser Gly His Ser Arg Thr Thr Val Lys Thr Ile Thr Val 485 490 495

Ser Ala Glu Leu Pro Lys Pro Ser Ile Ser Ser Asn Asn Ser Lys Pro 500 505 510

Val Glu Asp Lys Asp Ala Val Ala Phe Thr Cys Glu Pro Glu Ala Gln 515 520 525

Asn Thr Thr Tyr Leu Trp Trp Val Asn Gly Gln Ser Leu Pro Val Ser 530 540

Pro Arg Leu Gln Leu Ser Asn Gly Asn Arg Thr Leu Thr Leu Phe Asn 545 550 555

Val Thr Arg Asn Asp Ala Arg Ala Tyr Val Cys Gly Ile Gln Asn Ser 565 570 575

Val Ser Ala Asn Arg Ser Asp Pro Val Thr Leu Asp Val Leu Tyr Gly
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Pro Asp Thr Pro Ile Ile Ser Pro Pro Asp Ser Ser Tyr Leu Ser Gly 595 600 605

Ala Asn Leu Asn Leu Ser Cys His Ser Ala Ser Asn Pro Ser Pro Gln 610 620

Tyr Ser Trp Arg Ile Asn Gly Ile Pro Gln Gln His Thr Gln Val Leu 625 630 635 640

Phe Ile Ala Lys Ile Thr Pro Asn Asn Gly Thr Tyr Ala Cys Phe 645 650 655

Val Ser Asn Leu Ala Thr Gly Arg Asn Asn Ser Ile Val Lys Ser Ile 660 665 670

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Leu Arg Leu Pro Ala Ser Pro Glu Thr His Leu Asp Met Leu Arg His 35 40 45

Leu Tyr Gln Gly Cys Gln Val Val Gln Gly Asn Leu Glu Leu Thr Tyr 50 55 60

Leu Pro Thr Asn Ala Ser Leu Ser Phe Leu Gln Asp Ile Gln Glu Val 65 70 75 80

Gln Gly Tyr Val Leu Ile Ala His Asn Gln Val Arg Gln Val Pro Leu 85 90 95

Gln Arg Leu Arg Ile Val Arg Gly Thr Gln Leu Phe Glu Asp Asn Tyr
100 105 110

Ala Leu Ala Val Leu Asp Asn Gly Asp Pro Leu Asn Asn Thr Thr Pro 115 120 125

Val Thr Gly Ala Ser Pro Gly Gly Leu Arg Glu Leu Gln Leu Arg Ser 130 135 140

Leu Thr Glu Ile Leu Lys Gly Gly Val Leu Ile Gln Arg Asn Pro Gln 145 150 155 160

Leu Cys Tyr Gln Asp Thr Ile Leu Trp Lys Asp Ile Phe His Lys Asn 165 170 175

Asn Gln Leu Ala Leu Thr Leu Ile Asp Thr Asn Arg Ser Arg Ala Cys 180 185 190

His Pro Cys Ser Pro Met Cys Lys Gly Ser Arg Cys Trp Gly Glu Ser 195 200 205

Ser Glu Asp Cys Gln Ser Leu Thr Arg Thr Val Cys Ala Gly Gly Cys 210 215 220

Ala Arg Cys Lys Gly Pro Leu Pro Thr Asp Cys Cys His Glu Gln Cys 225 230 235 240

Ala Ala Gly Cys Thr Gly Pro Lys His Ser Asp Cys Leu Ala Cys Leu 245 250 255

His Phe Asn His Ser Gly Ile Cys Glu Leu His Cys Pro Ala Leu Val 260 265 270 Thr Tyr Asn Thr Asp Thr Phe Glu Ser Met Pro Asn Pro Glu Gly Arg 275 280 285

Tyr Thr Phe Gly Ala Ser Cys Val Thr Ala Cys Pro Tyr Asn Tyr Leu 290 295 300

Ser Thr Asp Val Gly Ser Cys Thr Leu Val Cys Pro Leu His Asn Gln 305 310 315 320

Glu Val Thr Ala Glu Asp Gly Thr Gln Arg Cys Glu Lys Cys Ser Lys 325 330 335

Pro Cys Ala Arg Val Cys Tyr Gly Leu Gly Met Glu His Leu Arg Glu
340 345 350

Val Arg Ala Val Thr Ser Ala Asn Ile Gln Glu Phe Ala Gly Cys Lys 355 360 365

Lys Ile Phe Gly Ser Leu Ala Phe Leu Pro Glu Ser Phe Asp Gly Asp 370 375 380

Pro Ala Ser Asn Thr Ala Pro Leu Gln Pro Glu Gln Leu Gln Val Phe 385 390 395 400

Glu Thr Leu Glu Glu Ile Thr Gly Tyr Leu Tyr Ile Ser Ala Trp Pro
405 410 415

Asp Ser Leu Pro Asp Leu Ser Val Phe Gln Asn Leu Gln Val Ile Arg 420 425 430

Gly Arg Ile Leu His Asn Gly Ala Tyr Ser Leu Thr Leu Gln Gly Leu 435 440 445

Gly Ile Ser Trp Leu Gly Leu Arg Ser Leu Arg Glu Leu Gly Ser Gly 450 455 460

Leu Ala Leu Ile His His Asn Thr His Leu Cys Phe Val His Thr Val 465 470 475 480

Pro Trp Asp Gln Leu Phe Arg Asn Pro His Gln Ala Leu Leu His Thr
485 490 495

Ala Asn Arg Pro Glu Asp Glu Cys Val Gly Glu Gly Leu Ala Cys His
500 505 510

Gln Leu Cys Ala Arg Gly His Cys Trp Gly Pro Gly Pro Thr Gln Cys 515 520 525

Val Asn Cys Ser Gln Phe Leu Arg Gly Gln Glu Cys Val Glu Glu Cys 530 540

Arg Val Leu Gln Gly Leu Pro Arg Glu Tyr Val Asn Ala Arg His Cys 545 550 555 560

Leu Pro Cys His Pro Glu Cys Gln Pro Gln Asn Gly Ser Val Thr Cys 565 570 575

Phe Gly Pro Glu Ala Asp Gln Cys Val Ala Cys Ala His Tyr Lys Asp 580 585 590

Pro Pro Phe Cys Val Ala Arg Cys Pro Ser Gly Val Lys Pro Asp Leu 595 600 605

Ser Tyr Met Pro Ile Trp Lys Phe Pro Asp Glu Glu Gly Ala Cys Gln 610 620

Pro Cys Pro Ile Asn Cys Thr His Ser Cys Val Asp Leu Asp Asp Lys 625 630 635 640

Gly Cys Pro Ala Glu Gln Arg Ala Ser Pro Leu Thr Ser Ile Ile Ser 645 650 655

Ala Val Val Gly Ile Leu Leu Val Val Val Leu Gly Val Val Phe Gly 660 665 670

Ile Leu Ile Lys Arg Arg Gln Gln Lys Ile Arg Lys Tyr Thr Met Arg 675 680 685

Arg Leu Leu Gln Glu Thr Glu Leu Val Glu Pro Leu Thr Pro Ser Gly 690 695 700

Ala Met Pro Asn Gln Ala Gln Met Arg Ile Leu Lys Glu Thr Glu Leu 705 710 715 720

Arg Lys Val Lys Val Leu Gly Ser Gly Ala Phe Gly Thr Val Tyr Lys 725 730 735

Gly Ile Trp Ile Pro Asp Gly Glu Asn Val Lys Ile Pro Val Ala Ile 740 745 750

Lys Val Leu Arg Glu Asn Thr Ser Pro Lys Ala Asn Lys Glu Ile Leu

755 760 765

Asp Glu Ala Tyr Val Met Ala Gly Val Gly Ser Pro Tyr Val Ser Arg 770 780

Leu Leu Gly Ile Cys Leu Thr Ser Thr Val Gln Leu Val Thr Gln Leu 785 790 795 800

Met Pro Tyr Gly Cys Leu Leu Asp His Val Arg Glu Asn Arg Gly Arg 805 810 815

Leu Gly Ser Gln Asp Leu Leu Asn Trp Cys Met Gln Ile Ala Lys Gly 820 825 830

Met Ser Tyr Leu Glu Asp Val Arg Leu Val His Arg Asp Leu Ala Ala 835 840 845

Arg Asn Val Leu Val Lys Ser Pro Asn His Val Lys Ile Thr Asp Phe 850 855 860

Gly Leu Ala Arg Leu Leu Asp Ile Asp Glu Thr Glu Tyr His Ala Asp 865 870 875 880

Gly Gly Lys Val Pro Ile Lys Trp Met Ala Leu Glu Ser Ile Leu Arg 885 890 895

Arg Arg Phe Thr His Gln Ser Asp Val Trp Ser Tyr Gly Val Thr Val 900 905 910

Trp Glu Leu Met Thr Phe Gly Ala Lys Pro Tyr Asp Gly Ile Pro Ala 915 920 925

Arg Glu Ile Pro Asp Leu Leu Glu Lys Gly Glu Arg Leu Pro Gln Pro 930 935 940

Pro Ile Cys Thr Ile Asp Val Tyr Met Ile Met Val Lys Cys Trp Met 945 950 955 960

Ile Asp Ser Glu Cys Arg Pro Arg Phe Arg Glu Leu Val Ser Glu Phe 965 970 975

Ser Arg Met Ala Arg Asp Pro Gln Arg Phe Val Val Ile Gln Asn Glu 980 985 990

Asp Leu Gly Pro Ala Ser Pro Leu Asp Ser Thr Phe Tyr Arg Ser Leu 995 1000 1005

Leu	Glu 1010	_	Asp	Asp	Met	Gly 1015	Asp	Leu	Val	Asp	Ala 1020	Glu	Glu	Tyr
Leu	Val 1025	Pro	Gln	Gln	Gly	Phe 1030	Phe	Cys	Pro	Asp	Pro 1035	Ala	Pro	Gly
Ala	Gly 1040	Gly	Met	Val	His	His 1045	Arg	His	Arg	Ser	Ser 1050	Ser	Thr	Arg
Ser	Gly 1055		Gly	Asp	Leu	Thr 1060	Leu	Gly	Leu	Glu	Pro 1065	Ser	Glu	Glu
Glu	Ala 1070	Pro	Arg	Ser	Pro	Leu 1075	Ala	Pro	Ser	Glu	Gly 1080	Ala	Gly	Ser
Asp	Val 1085	Phe	Asp	Gly	Asp	Leu 1090	Gly	Met	Gly	Ala	Ala 1095	Lys	Gly	Leu
Gln	Ser 1100	Leu	Pro	Thr	His	Asp 1105	Pro	Ser	Pro	Leu	Gln 1110	Arg	Tyr	Ser
Glu	Asp 1115	Pro	Thr	Val	Pro	Leu 1120	Pro	Ser	Glu	Thr	Asp 1125	Gly	Tyr	Val
Ala	Pro 1130	Leu	Thr	Cys	Ser	Pro 1135	Gln	Pro	Glu	Tyr	Val 1140	Asn	Gln	Pro
Asp	Val 1145	Arg	Pro	Gln	Pro	Pro 1150	Ser	Pro	Arg	Glu	Gly 1155	Pro	Leu	Pro
Ala	Ala 1160	Arg	Pro	Ala	Gly	Ala 1165	Thr	Leu	Glu	Arg	Pro 1170	Lys	Thr	Leu
Ser	Pro 1175	Gly	Lys	Asn	Gly	Val 1180	Val	Lys	Asp	Val	Phe 1185	Ala	Phe	Gly
Gly	Ala 1190	Val	Glu	Asn	Pro	Glu 1195	Tyr	Leu	Thr	Pro	Gln 1200	Gly	Gly	Ala
Ala	Pro 1205	Gln	Pro	His	Pro	Pro 1210	Pro	Ala	Phe	Ser	Pro 1215	Ala	Phe	Asp
Asn	Leu 1220	Tyr	Tyr	Trp	Asp	Gln 1225	Asp	Pro	Pro	Glu	Arg 1230	Gly	Ala	Pro

Pro Ser Thr Phe Lys Gly Thr Pro Thr Ala Glu Asn Pro Glu Tyr 1235 1240 1245

Leu Gly Leu Asp Val Pro Val 1250 1255

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Glu Ala Arg Gly Glu Ala Leu Gly Leu Val Gly Ala Gln Ala Pro Ala 20 25 30

Thr Glu Glu Gln Gln Thr Ala Ser Ser Ser Ser Thr Leu Val Glu Val
35 40 45

Thr Leu Gly Glu Val Pro Ala Ala Asp Ser Pro Ser Pro Pro His Ser 50 55 60

Pro Gln Gly Ala Ser Ser Phe Ser Thr Thr Ile Asn Tyr Thr Leu Trp 75 80

Arg Gln Ser Asp Glu Gly Ser Ser Asn Gln Glu Glu Gly Pro Arg 85 90 95

Met Phe Pro Asp Leu Glu Ser Glu Phe Gln Ala Ala Ile Ser Arg Lys
100 105 110

Met Val Glu Leu Val His Phe Leu Leu Leu Lys Tyr Arg Ala Arg Glu 115 120 125

Pro Val Thr Lys Ala Glu Met Leu Glu Ser Val Leu Arg Asn Cys Gln 130 135 140

Asp Phe Phe Pro Val Ile Phe Ser Lys Ala Ser Glu Tyr Leu Gln Leu 145 150 155 160

Val Phe Gly Ile Glu Val Val Glu Val Val Pro Ile Ser His Leu Tyr 165 170 175

Ile Leu Val Thr Cys Leu Gly Leu Ser Tyr Asp Gly Leu Leu Gly Asp

185 180 190

Asn Gln Val Met Pro Lys Thr Gly Leu Leu Ile Ile Val Leu Ala Ile

Ile Ala Ile Glu Gly Asp Cys Ala Pro Glu Glu Lys Ile Trp Glu Glu 215

Leu Ser Met Leu Glu Val Phe Glu Gly Arg Glu Asp Ser Val Phe Ala 230 235

His Pro Arg Lys Leu Leu Met Gln Asp Leu Val Gln Glu Asn Tyr Leu 245 250

Glu Tyr Arg Gln Val Pro Gly Ser Asp Pro Ala Cys Tyr Glu Phe Leu

Trp Gly Pro Arg Ala Leu Ile Glu Thr Ser Tyr Val Lys Val Leu His 280

His Thr Leu Lys Ile Gly Gly Glu Pro His Ile Ser Tyr Pro Pro Leu 295 300

His Glu Arg Ala Leu Arg Glu Gly Glu Glu 305 310

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Thr Glu Glu Glu Ala Ala Ser Ser Ser Thr Leu Val Glu Val 40

Thr Leu Gly Glu Val Pro Ala Ala Glu Ser Pro Asp Pro Pro Gln Ser 55

Pro Gln Gly Ala Ser Ser Leu Pro Thr Thr Met Asn Tyr Pro Leu Trp 75

Ser Gln Ser Tyr Glu Asp Ser Ser Asn Gln Glu Glu Glu Gly Pro Ser 85 90 95

Thr Phe Pro Asp Leu Glu Ser Glu Phe Gln Ala Ala Leu Ser Arg Lys
100 105 110

Val Ala Glu Leu Val His Phe Leu Leu Leu Lys Tyr Arg Ala Arg Glu 115 120 125

Pro Val Thr Lys Ala Glu Met Leu Gly Ser Val Val Gly Asn Trp Gln 130 135 140

Tyr Phe Phe Pro Val Ile Phe Ser Lys Ala Ser Ser Ser Leu Gln Leu 145 150 155 160

Val Phe Gly Ile Glu Leu Met Glu Val Asp Pro. Ile Gly His Leu Tyr 165 170 175

Ile Phe Ala Thr Cys Leu Gly Leu Ser Tyr Asp Gly Leu Leu Gly Asp 180 185 190

Asn Gln Ile Met Pro Lys Ala Gly Leu Leu Ile Ile Val Leu Ala Ile 195 200 . 205

Ile Ala Arg Glu Gly Asp Cys Ala Pro Glu Glu Lys Ile Trp Glu Glu 210 215 220

Leu Ser Val Leu Glu Val Phe Glu Gly Arg Glu Asp Ser Ile Leu Gly 225 230 235 240

Asp Pro Lys Leu Leu Thr Gln His Phe Val Gln Glu Asn Tyr Leu 245 250 255

Glu Tyr Arg Gln Val Pro Gly Ser Asp Pro Ala Cys Tyr Glu Phe Leu 260 265 270

Trp Gly Pro Arg Ala Leu Val Glu Thr Ser Tyr Val Lys Val Leu His 275 280 285

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His Glu Trp Val Leu Arg Glu Gly Glu Glu 305

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Asp Ile Glu Gln Trp Phe Thr Glu Asp Pro Gly Pro Asp Glu Ala Pro 50 55 60

Arg Met Pro Glu Ala Ala Pro Pro Val Ala Pro Ala Pro Ala Ala Pro 65 70 75 80

Thr Pro Ala Ala Pro Ala Pro Ala Pro Ser Trp Pro Leu Ser Ser Ser Ser 85 90 95

Val Pro Ser Gln Lys Thr Tyr Gln Gly Ser Tyr Gly Phe Arg Leu Gly
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Phe Leu His Ser Gly Thr Ala Lys Ser Val Thr Cys Thr Tyr Ser Pro 115 120 125

Ala Leu Asn Lys Met Phe Cys Gln Leu Ala Lys Thr Cys Pro Val Gln 130 135 140

Leu Trp Val Asp Ser Thr Pro Pro Pro Gly Thr Arg Val Arg Ala Met 145 150 155 160

Ala Ile Tyr Lys Gln Ser Gln His Met Thr Glu Val Val Arg Arg Cys 165 170 175

Pro His His Glu Arg Cys Ser Asp Ser Asp Gly Leu Ala Pro Pro Gln 180 185 190

His Leu Ile Arg Val Glu Gly Asn Leu Arg Val Glu Tyr Leu Asp Asp 195 200 205

Arg Asn Thr Phe Arg His Ser Val Val Val Pro Tyr Glu Pro Pro Glu 210 215 220

Val Gly Ser Asp Cys Thr Thr Ile His Tyr Asn Tyr Met Cys Asn Ser 230 235

Ser Cys Met Gly Gly Met Asn Arg Pro Ile Leu Thr Ile Ile Thr

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Arg Val Cys Ala Cys Pro Gly Arg Asp Arg Thr Glu Glu Glu Asn 280 275

Leu Arg Lys Lys Gly Glu Pro His His Glu Leu Pro Pro Gly Ser Thr 290 295

Lys Arg Ala Leu Pro Asn Asn Thr Ser Ser Pro Gln Pro Lys Lys 305 310

Lys Pro Leu Asp Gly Glu Tyr Phe Thr Leu Gln Ile Arg Gly Arg Glu 325

Arg Phe Glu Met Phe Arg Glu Leu Asn Glu Ala Leu Glu Leu Lys Asp 340

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Gly Glu Pro His Ile Ser Tyr
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Trp Glu Glu Leu Ser Met Leu
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Ala Glu Leu Val His Phe Leu Leu Leu
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Glu Glu Lys Ile Trp Glu Glu Leu Ser Val
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Trp Glu Glu Leu Ser Val Leu Glu Val Phe
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Glu Glu Glu Pro Ser Thr Phe
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Phe Glu Gly Arg Glu Asp Ser Ile Leu
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Phe Glu Gly Arg Glu Asp Ser Ile Leu Gly
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Gln Glu Ala Ala Ser Ser Ser Ser Thr
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Phe Glu Gly Arg Glu Asp Ser Ile
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Gln Glu Glu Gly Pro Ser Thr Phe
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Val Gln Ala Ser Lys Leu Cys Leu Gly Trp Leu Trp Gly Met Asp Ile
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25

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Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu Ser Phe Leu 35 40 45

Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp Thr Ala Ser 50 55 60

Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys Ser Pro His 65 70 75 80

His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu Leu Met Thr 85 90 95

Leu Ala Thr Trp Val Gly Val Asn Leu Glu Asp Pro Ala Ser Arg Asp
100 105 110

Leu Val Val Ser Tyr Val Asn Thr Asn Met Gly Leu Lys Phe Arg Gln 115 120 125

Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg Glu Thr Val 130 135 140

Ile Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr Pro Pro Ala 145 150 155 160

Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro Glu Thr Thr 165 170 175

Val Val Arg Arg Gly Arg Ser Pro Arg Arg Thr Pro Ser Pro 180 185 190

Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Ser Gln Ser Arg 195 200 205

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Arg Leu Leu Thr Ala Ser Leu Leu Thr Phe Trp Asn Pro Pro Thr 20 25 30

Thr Ala Lys Leu Thr Ile Glu Ser Thr Pro Phe Asn Val Ala Glu Gly 35 40 45

Lys Glu Val Leu Leu Val His Asn Leu Pro Gln His Leu Phe Gly 50 55 60

Tyr Ser Trp Tyr Lys Gly Glu Arg Val Asp Gly Asn Arg Gln Ile Ile 65 70 75 80

Gly Tyr Val Ile Gly Thr Gln Gln Ala Thr Pro Gly Pro Ala Tyr Ser 85 90 95

Gly Arg Glu Ile Ile Tyr Pro Asn Ala Ser Leu Leu Ile Gln Asn Ile 100 105 110

Ile Gln Asn Asp Thr Gly Phe Tyr Thr Leu His Val Ile Lys Ser Asp 115 120 125

Leu Val Asn Glu Glu Ala Thr Gly Gln Phe Arg Val Tyr Pro Glu Leu 130 135 140

Pro	Lys	Pro	Ser	Ile		Ser	Asn	Asn	Ser	-	Pro	Val	Glu	Asp	-
145					150					155					160

Asp Ala Val Ala Phe Thr Cys Glu Pro Glu Thr Gln Asp Ala Thr Tyr 165 170 175

Leu Trp Trp Val Asn Asn Gln Ser Leu Pro Val Ser Pro Arg Leu Gln
180 185 190

Leu Ser Asn Gly Asn Arg Thr Leu Thr Leu Phe Asn Val Thr Arg Asn 195 200 205

Asp Thr Ala Ser Tyr Lys Cys Glu Thr Gln Asn Pro Val Ser Ala Arg 210 215 220

Arg Ser Asp Ser Val Ile Leu Asn Val Leu Tyr Gly Pro Asp Ala Pro 225 230 235 240

Thr Ile Ser Pro Leu Asn Thr Ser Tyr Arg Ser Gly Glu Asn Leu Asn 245 250 255

Leu Ser Cys His Ala Ala Ser Asn Pro Pro Ala Gln Tyr Ser Trp Phe 260 265 270

Val Asn Gly Thr Phe Gln Gln Ser Thr Gln Glu Leu Phe Ile Pro Asn 275 280 285

Ile Thr Val Asn Asn Ser Gly Ser Tyr Thr Cys Gln Ala His Asn Ser 290 295 300

Asp Thr Gly Leu Asn Arg Thr Thr Val Thr Thr Ile Thr Val Tyr Ala 305 310 315 320

Glu Pro Pro Lys Pro Phe Ile Thr Ser Asn Asn Ser Asn Pro Val Glu 325 330 335

Asp Glu Asp Ala Val Ala Leu Thr Cys Glu Pro Glu Ile Gln Asn Thr 340 345 350

Thr Tyr Leu Trp Trp Val Asn Asn Gln Ser Leu Pro Val Ser Pro Arg 355 360 365

Leu Gln Leu Ser Asn Asp Asn Arg Thr Leu Thr Leu Leu Ser Val Thr 370 375 380

Arg Asn Asp Val Gly Pro Tyr Glu Cys Gly 385

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<212> PRT

<213> Homo sapiens

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Ser Ala Ser Asn Pro Ser Pro Gln Tyr Ser Trp Arg Ile Asn Gly Ile 20 25 30

Pro Gln Gln His Thr Gln Val Leu Phe Ile Ala Lys Ile Thr Pro Asn 35 40 45

Asn Asn Gly Thr Tyr Ala Cys Phe Val Ser Asn Leu Ala Thr Gly Arg
50 55 60

Asn Asn Ser Ile Val Lys Ser Ile Thr Val Ser Ala Ser Gly Thr Ser 65 70 75 80

Pro Gly Leu Ser Ala Gly Ala Thr Val Gly Ile Met Ile Gly Val Leu 85 90 95

Val Gly Val Ala Leu Ile 100

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<211> 19

<212> PRT

<213> Homo sapiens

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Ser Ala Asn Arg Ser Asp Pro Val Thr Leu Asp Val Leu Tyr Gly Pro 1 5 10 15

Asp Thr Pro

<210> 757

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<212> PRT

<213> Homo sapiens

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Lys Val Lys Val Leu Gly Ser Gly Ala Phe Gly Thr Val Tyr Lys Gly 20 25 30

Ile Trp Ile Pro Asp Gly Glu Asn Val Lys Ile Pro Val Ala Ile Lys 35 40 45

Val Leu Arg Glu Asn Thr Ser Pro Lys Ala Asn Lys Glu Ile Leu Asp 50 55 60

Glu Ala Tyr Val Met Ala Gly Val Gly Ser Pro Tyr Val Ser Arg Leu 65 70 75 80

Leu Gly Ile Cys Leu Thr Ser Thr Val Gln Leu Val Thr Gln Leu Met 85 90 95

Pro Tyr Gly Cys Leu Leu Asp His Val Arg Glu Asn Arg Gly Arg Leu 100 105 110

Gly Ser Gln Asp Leu Leu Asn Trp Cys Met Gln Ile Ala Lys Gly Met 115 120 125

Ser Tyr Leu Glu Asp Val Arg Leu Val His Arg Asp Leu Ala Ala Arg 130 135 140

Asn Val Leu Val Lys Ser Pro Asn His Val Lys Ile Thr Asp Phe Gly
145 150 155 160

Leu Ala Arg Leu Leu Asp Ile Asp Glu Thr Glu Tyr His Ala Asp Gly
165 170 175

Gly Lys Val Pro Ile Lys Trp Met Ala Leu Glu Ser Ile Leu Arg Arg 180 185 190

Arg Phe Thr His Gln Ser Asp Val Trp Ser Tyr Gly Val Thr Val Trp 195 200 205

Glu Leu Met Thr Phe Gly Ala Lys Pro Tyr Asp Gly Ile Pro Ala Arg 210 215 220

Glu Ile Pro Asp Leu Leu Glu Lys Gly Glu Arg Leu Pro Gln Pro Pro 225 230 235 240

- Ile Cys Thr Ile Asp Val Tyr Met Ile Met Val Lys Cys Trp Met Ile 245 250 255
- Asp Ser Glu Cys Arg Pro Arg Phe Arg Glu Leu Val Ser Glu Phe Ser 260 265 270
- Arg Met Ala Arg Asp Pro Gln Arg Phe Val Val Ile Gln Asn Glu Asp 275 280 285
- Leu Gly Pro Ala Ser Pro Leu Asp Ser Thr Phe Tyr Arg Ser Leu Leu 290 295 300
- Glu Asp Asp Asp Met Gly Asp Leu Val Asp Ala Glu Glu Tyr Leu Val 305 310 315 320
- Pro Gln Gln Gly Phe Phe Cys Pro Asp Pro Ala Pro Gly Ala Gly Gly 325 330 335
- Met Val His His Arg His Arg Ser Ser Ser Thr Arg Ser Gly Gly Gly 340 345 350
- Asp Leu Thr Leu Gly Leu Glu Pro Ser Glu Glu Glu Ala Pro Arg Ser 355 360 365
- Pro Leu Ala Pro Ser Glu Gly Ala Gly Ser Asp Val Phe Asp Gly Asp 370 375 380
- Leu Gly Met Gly Ala Ala Lys Gly Leu Gln Ser Leu Pro Thr His Asp 385 390 395 400
- Pro Ser Pro Leu Gln Arg Tyr Ser Glu Asp Pro Thr Val Pro Leu Pro 405 410 415
- Ser Glu Thr Asp Gly Tyr Val Ala Pro Leu Thr Cys Ser Pro Gln Pro 420 425 430
- Glu Tyr Val Asn Gln Pro Asp Val Arg Pro Gln Pro Pro Ser Pro Arg 435 440 445
- Glu Gly Pro Leu Pro Ala Ala Arg Pro Ala Gly Ala Thr Leu Glu Arg 450 455 460
- Pro Lys Thr Leu Ser Pro Gly Lys Asn Gly Val Val Lys Asp Val Phe 465 470 475 480
- Ala Phe Gly Gly Ala Val Glu Asn Pro Glu Tyr Leu Thr Pro Gln Gly

485 495 490

Gly Ala Ala Pro Gln Pro His Pro Pro Pro Ala Phe Ser Pro Ala Phe 505

Asp Asn Leu Tyr Trp Asp Gln Asp Pro Pro Glu Arg Gly Ala Pro 520

Pro Ser Thr Phe Lys Gly Thr Pro Thr Ala Glu Asn Pro Glu Tyr Leu 530 535

Gly Leu Asp Val Pro Val 545

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<212> PRT <213> Homo sapiens

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Asp Leu Thr Leu Gly Leu Glu Pro Ser Glu Glu Glu Ala Pro Arg Ser

Pro Leu Ala Pro Ser Glu Gly Ala Gly Ser Asp Val Phe Asp Gly Asp

Leu Gly Met Gly Ala Ala Lys Gly Leu Gln Ser Leu Pro Thr His Asp 55

Pro Ser Pro Leu Gln Arg Tyr Ser Glu Asp Pro Thr Val Pro Leu Pro 70

Ser Glu Thr Asp Gly Tyr Val Ala Pro Leu Thr Cys Ser Pro Gln Pro 85

Glu Tyr Val Asn Gln Pro Asp Val Arg Pro Gln Pro Pro Ser Pro Arg

Glu Gly Pro Leu Pro Ala Ala Arg Pro Ala Gly Ala Thr Leu Glu Arg 120

Pro Lys Thr Leu Ser Pro Gly Lys Asn Gly Val Val Lys Asp Val Phe 135 130 140

Ala Phe Gly Gly Ala Val Glu Asn Pro Glu Tyr Leu Thr Pro Gln Gly 145 150 155 160

Gly Ala Ala Pro Gln Pro His Pro Pro Pro Ala Phe Ser Pro Ala Phe
165 170 175

Asp Asn Leu Tyr Tyr Trp Asp Gln Asp Pro Pro Glu Arg Gly Ala Pro 180 185 190

Pro Ser Thr Phe Lys Gly Thr Pro Thr Ala Glu Asn Pro Glu Tyr Leu 195 200 205

Gly Leu Asp Val Pro Val 210

<210> 759

<211> 27

<212> PRT

<213> Homo sapiens

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Met Ala Leu Glu Ser Ile Leu Arg Arg Phe Thr His Gln Ser Asp 1 5 10 15

Val Trp Ser Tyr Gly Val Thr Val Trp Glu Leu 20 25

<210> 760

<211> 119

<212> PRT

<213> Homo sapiens

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Met Pro Lys Thr Gly Leu Leu Ile Ile Val Leu Ala Ile Ile Ala Ile 1 5 10 15

Glu Gly Asp Cys Ala Pro Glu Glu Lys Ile Trp Glu Glu Leu Ser Met 20 25 30

Leu Glu Val Phe Glu Gly Arg Glu Asp Ser Val Phe Ala His Pro Arg
35 40 45

Lys Leu Leu Met Gln Asp Leu Val Gln Glu Asn Tyr Leu Glu Tyr Arg 50 55 60

Gln Val Pro Gly Ser Asp Pro Ala Cys Tyr Glu Phe Leu Trp Gly Pro 65 70 75 80

Arg Ala Leu Ile Glu Thr Ser Tyr Val Lys Val Leu His His Thr Leu 85 90 95

Lys Ile Gly Glu Pro His Ile Ser Tyr Pro Pro Leu His Glu Arg 100 105 110

Ala Leu Arg Glu Gly Glu Glu 115

<210> 761

<211> 166

<212> PRT

<213> Homo sapiens

<400> 761

Met Pro Leu Glu Gln Arg Ser Gln His Cys Lys Pro Glu Glu Gly Leu 1 5 10 15

Glu Ala Arg Gly Glu Ala Leu Gly Leu Val Gly Ala Gln Ala Pro Ala 20 25 30

Thr Glu Glu Glu Ala Ala Ser Ser Ser Ser Thr Leu Val Glu Val 35 40 45

Thr Leu Gly Glu Val Pro Ala Ala Glu Ser Pro Asp Pro Pro Gln Ser 50 55 60

Pro Gln Gly Ala Ser Ser Leu Pro Thr Thr Met Asn Tyr Pro Leu Trp 65 70 75 80

Ser Gln Ser Tyr Glu Asp Ser Ser Asn Gln Glu Glu Glu Gly Pro Ser 85 90 95

Thr Phe Pro Asp Leu Glu Ser Glu Phe Gln Ala Ala Leu Ser Arg Lys
100 105 110

Val Ala Glu Leu Val His Phe Leu Leu Leu Lys Tyr Arg Ala Arg Glu 115 120 125

Pro Val Thr Lys Ala Glu Met Leu Gly Ser Val Val Gly Asn Trp Gln 130 135 140

Tyr Phe Phe Pro Val Ile Phe Ser Lys Ala Ser Ser Ser Leu Gln Leu 145 150 155 160

Val Phe Gly Ile Glu Leu 165

<210> 762

<211> 15

<212> PRT

<213> Homo sapiens

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Lys Leu Leu Thr Gln His Phe Val Gln Glu Asn Tyr Leu Glu Tyr 10

<210> 763

<211> 354 <212> PRT <213> Homo sapiens

<400> 763

Met Asp Asp Leu Met Leu Ser Pro Asp Asp Ile Glu Gln Trp Phe Thr 5 10

Glu Asp Pro Gly Pro Asp Glu Ala Pro Arg Met Pro Glu Ala Ala Pro 20 25

Pro Val Ala Pro Ala Pro Ala Pro Thr Pro Ala Ala Pro Ala Pro

Ala Pro Ser Trp Pro Leu Ser Ser Ser Val Pro Ser Gln Lys Thr Tyr 55

Gln Gly Ser Tyr Gly Phe Arg Leu Gly Phe Leu His Ser Gly Thr Ala 70

Lys Ser Val Thr Cys Thr Tyr Ser Pro Ala Leu Asn Lys Met Phe Cys 85

Gln Leu Ala Lys Thr Cys Pro Val Gln Leu Trp Val Asp Ser Thr Pro

Pro Pro Gly Thr Arg Val Arg Ala Met Ala Ile Tyr Lys Gln Ser Gln

His Met Thr Glu Val Val Arg Cys Pro His His Glu Arg Cys Ser 135

Asp Ser Asp Gly Leu Ala Pro Pro Gln His Leu Ile Arg Val Glu Gly 145 150 155

Asn Leu Arg Val Glu Tyr Leu Asp Asp Arg Asn Thr Phe Arg His Ser 165 170 175

Val Val Pro Tyr Glu Pro Pro Glu Val Gly Ser Asp Cys Thr Thr 180 185 190

Ile His Tyr Asn Tyr Met Cys Asn Ser Ser Cys Met Gly Gly Met Asn 195 200 205

Arg Arg Pro Ile Leu Thr Ile Ile Thr Leu Glu Asp Ser Ser Gly Asn 210 215 220

Leu Leu Gly Arg Asn Ser Phe Glu Val Arg Val Cys Ala Cys Pro Gly 225 230 235 240

Arg Asp Arg Thr Glu Glu Glu Asn Leu Arg Lys Lys Gly Glu Pro 245 250 255

His His Glu Leu Pro Pro Gly Ser Thr Lys Arg Ala Leu Pro Asn Asn 260 265 270

Thr Ser Ser Pro Gln Pro Lys Lys Pro Leu Asp Gly Glu Tyr 275 280 285

Phe Thr Leu Gln Ile Arg Gly Arg Glu Arg Phe Glu Met Phe Arg Glu 290 295 300

Leu Asn Glu Ala Leu Glu Leu Lys Asp Ala Gln Ala Gly Lys Glu Pro 305 310 315 320

Gly Gly Ser Arg Ala His Ser Ser His Leu Lys Ser Lys Gly Gln 325 330 335

Ser Thr Ser Arg His Lys Lys Leu Met Phe Lys Thr Glu Gly Pro Asp 340 345 350

Ser Asp

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His Ser Gly Thr Ala Lys Ser Val Thr Cys Thr Tyr Ser Pro Ala Leu

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Asn Lys Met

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Met Phe Cys Gln Leu Ala Lys Thr Cys Pro Val Gln Leu Trp Val Asp 1 5 10 15

Ser Thr Pro Pro Pro Gly Thr Arg Val Arg Ala Met Ala Ile Tyr Lys
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Gln Ser Gln His Met Thr Glu Val Val Arg Arg Cys Pro His His Glu 35 40 45

Arg Cys Ser Asp Ser Asp Gly Leu Ala Pro Pro Gln His Leu Ile Arg 50 55 60

Val Glu Gly Asn Leu Arg Val Glu Tyr Leu Asp Asp Arg Asn Thr Phe 65 70 75 80

Arg His Ser Val Val Val Pro Tyr Glu Pro Pro Glu Val Gly Ser Asp 85 90 95

Cys Thr Thr Ile His Tyr 100

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Xaa Cys Xaa Gly Xaa Xaa Xaa Asn Gly
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